

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application No.: 10/088,485  
Atty Docket No.: Q63722

12/23/04

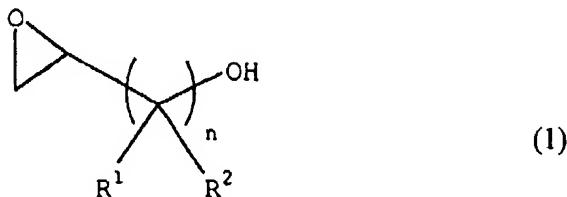
### AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

### **LISTING OF CLAIMS:**

Claim 1. (currently amended): A carrier-containing catalyst which contains at least one element selected from the group consisting of Group V elements, Group VI elements, Group VII elements, Group VIII elements, Group IX elements, Group X elements, and Group XI elements in the periodic table, and is to be used for subjecting an epoxy alcohol represented by the following general formula (1) to a hydrogenolysis reaction in the presence of at least one solvent selected from the group consisting of ethers, esters, aromatic hydrocarbon compounds, alicyclic hydrocarbon compounds and aliphatic hydrocarbon compounds, to thereby obtain a both endhydroxyl group-terminated diol represented by the following general formula (2).

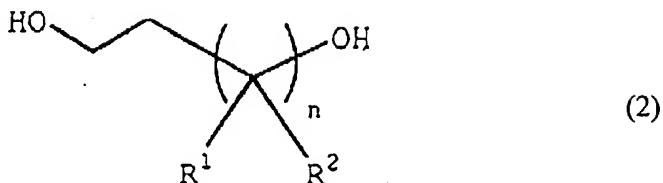
General formula (1) :



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6);

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application No.: 10/088,485  
Atty Docket No.: Q63722

General formula (2):



(wherein  $R^1$  and  $R^2$  each independently represents hydrogen, a cycloalkyl group, an aryl group or an alkyl group having 1 to 8 carbon atoms, and  $n$  represents an integer of 1 to 6)

wherein the carrier comprises at least one species selected from the group consisting of:  
activated carbon, alumina, silica, silica alumina, zeolite, diatomaceous earth, titania, and  
zirconia.

Claim 2. (original): A catalyst for producing both end-hydroxyl group-terminated diols according to claim 1, which comprises at least one element selected from the group consisting of Fe, Co, Ni, Cu, Re and Ru.

Claims 3 to 6 (canceled).

Claim 7. (currently amended): A process for producing a catalyst for producing both end-hydroxyl group-terminated diols according to claim 4 or 5, which comprises at least the following Step (C) and Step (D):

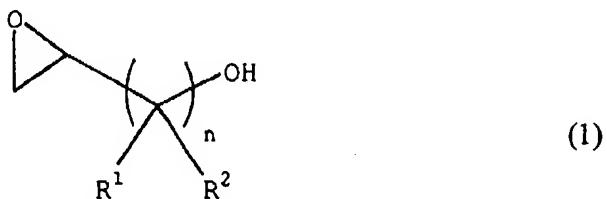
Step (C) : a step of causing at least one element or a compound containing the at least one element to be carried on a carrier, the element being selected from the group consisting of Group V elements, Group VI elements, Group VII elements, Group VIII elements, Group IX elements, Group X elements, and Group XI elements in the periodic table, to thereby produce a carrier carrying thereon the at least one element;

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application No.: 10/088,485  
Atty Docket No.: Q63722

Step (D) : a step of hydrogenating the at least one element carried on the carrier obtained in Step (C), to thereby produce a catalyst for producing both end hydroxyl group-terminated diols.

Claim 8. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol, wherein an epoxy alcohol represented by the following general formula (1) is subjected to a hydrogenolysis reaction in the presence of a catalyst for producing both end-hydroxyl group terminated diols according to any of claims 1-5, in the presence of at least one solvent selected from the group consisting of ethers, esters, aromatic hydrocarbon compounds, alicyclic hydrocarbon compounds and aliphatic hydrocarbon compounds, to thereby obtain a both endhydroxyl group-terminated diol represented by the following general formula (2).

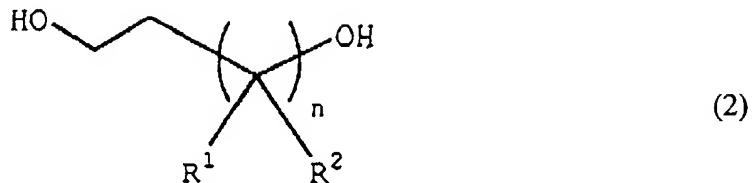
General formula (1) :



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6);

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application No.: 10/088,485  
Atty Docket No.: Q63722

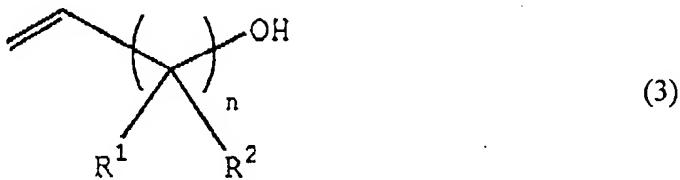
General formula (2):



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, a cycloalkyl group, an aryl group or an alkyl group having 1 to 8 carbon atoms, and n represents an integer of 1 to 6).

Claim 9. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol according to claim 8, wherein the epoxy alcohol represented by the following general formula (1) is a compound which has been obtained by the epoxidizing an unsaturated alcohol compound represented by formula (3):

General Formula (3):



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6).

AMENDMENT UNDER 37 C.F.R. § 1.111  
Application No.: 10/088,485  
Atty Docket No.: Q63722

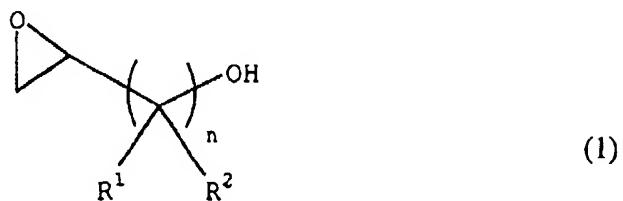
Claim 10. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol represented by the general formula (2), which comprises at least the following

Step (E) and Step (F):

Step (E) : a step of epoxidizing an unsaturated alcohol compound represented by general formula (3), to thereby obtain an epoxy alcohol represented by the general formula(1) ;

Step (F) : a step of subjecting the epoxy alcohol compound to a hydrogenolysis reaction in the presence of a catalyst for producing a both end-hydroxyl group-terminated diols according to any of claims 1-5, and in the presence of at least one solvent selected from the group consisting of ethers, esters, aromatic hydrocarbon compounds, alicyclic hydrocarbon compounds and aliphatic hydrocarbon compounds, to thereby obtain a both end-hydroxyl group-terminated diol represented by the following general formula (2).

General formula (1) :



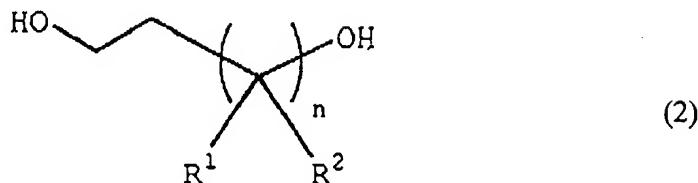
(wherein R' and R' each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6);

AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/088,485

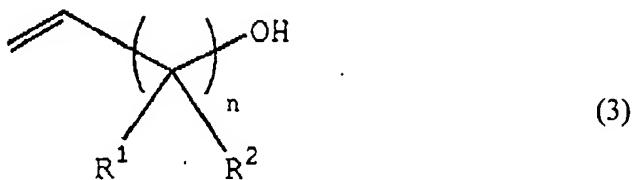
Atty Docket No.: Q63722

General formula (2):



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6)

General Formula (3):



(wherein R<sup>1</sup> and R<sup>2</sup> each independently represents hydrogen, an alkyl group having 1 to 8 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or an aryl group having 6 to 13 carbon atoms and n represents an integer of 1 to 6);

Claim 11. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol according to any of claims 8-10, wherein the epoxy alcohol represented by the following general formula (1) is at least one epoxy alcohol compound selected from the group consisting of: glycidol, 3,4-epoxy-1-butanol and 3,4-epoxy-2-butanol.

Claim 12. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol according to claims 9 or 10, wherein the an unsaturated alcohol compound

AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/088,485

Atty Docket No.: Q63722

represented by general formula (3) is at least one unsaturated alcohol compound selected from the group consisting of: allyl alcohol, 3-buten-1-ol and 3-buten-2-ol.

Claim 13. (withdrawn): A process for producing a both end-hydroxyl group-terminated diol according to any of claims 8-12, wherein the solvent is at least one species selected from the group consisting of diethyl ether, dibutyl ether, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, 1,4-dioxane, benzene, toluene, xylene, cyclohexane, hexane, ethyl acetate, propyl acetate, isopropyl acetate and butyl acetate.

Claim 14. (withdrawn): A both end-hydroxyl group-terminated diol, which has been produced by a process for producing a both end-hydroxyl group-terminated diol according to any of claims 8-13.